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# From Instructor-Driven Teaching to Student-Focused Learning – a Personal Narrative

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**STEM Instructional Program 2019-20**

## Introduction

My approach to teaching for several years was to explain the relevant material to my students, and then follow up with questions to confirm understanding. This is the approach that I was exposed to as a student and so I never questioned it. If my performance in a class was not up to par, then there must have been some deficiencies in preparation on my part. I never stopped to consider that perhaps the employment of a different teaching strategy by the instruction might have helped me obtain a better grade. Of course, this is mere speculation – it may be that my performance in this hypothetical course might not have improved significantly even with a teaching approach designed to better facilitate learning in students. Or perhaps it might have.

Over the years, there has been the need to re-evaluate the methods and strategies employed in facilitating learning in students with the goals of enhancing classroom engagement, increasing material-retention rates, improving class attendance, and ultimately achieving higher graduation rates in students. While my initial approach to teaching – the lecturer approach - is not entirely without merit, the STEM Instructional Program showed me a better way.

## Background – Prior to STEM-Instructional Program

My earliest teaching experiences at WMU were as a Graduate Teaching Assistant and entailed teaching Computer Science (CS) labs) for one of the core undergraduate CS courses (CS I – Introduction to Programming in Java). After some semesters, I taught labs for the more advanced CS II, and later still, taught the CS II lectures (as opposed to the labs).

**Summary of Teaching Experience and Strategies Employed**:

- A mandatory general training and orientation was organized for all Teaching Assistants regardless of the courses they would be teaching.
- Some guidance was provided by instructors of record as well as more experienced teaching assistants.
  - Observing more experienced teaching assistants while they were teaching was extremely helpful.
- Topics taught were pre-determined by the instructor of record and flowed from learning outcomes.
- Student progress was assessed through quizzes, class exercises and assignments.
- My teaching approach:
  - Review lecture material with students,
  - Work through solutions to programming problems,
  - Assign quizzes and/or class exercises,
  - Review assignments,
  - Request student feedback (at the end of the semester)

## Why the STEM Instructional Program?

***Graduate Teaching Assistant Orientation***:

- Attending this training session prior to teaching at WMU was extremely helpful in providing the initial tools needed to teach. But after teaching for several semesters, I felt I needed to update my skill set to make my classes more engaging and improve attendance.

***Graduate Student Teaching Intensive Program (GSTI)***:

- During this program, I was introduced to the concept of ***Active Learning*** and, in addition to other points, learned the importance of soliciting feedback from students *multiple times - during the semester* and at the end of the course.

***But, I still had an unanswered question: how could I apply active learning strategies to classes in the STEM field, especially in a class that teaches programming languages?***

## Some Lessons Learned from STEM Instructional Program

**Sett the tone; sign a class contract**

Students and instructor indicate their expectations of each other, and this is formulated into a contract made available to all class participants, including the instructor (forms guidelines for acceptable classroom conduct).

**Show cognitive empathy**

Like me, my students face challenges from time to time that could impact their work.

**Incorporate activity-based learning**[1]

- Muddiest point
- Jigsaw.
- Flipped classroom
- Think-pair-share

**Be approachable**

Let students see me as a human being like themselves who:

- experiences challenges
- makes mistakes;
- is open to learning from students.

(Share experiences with them.)

## More Lessons Learned

**Think "universal design"**

Design classes so they are readily accessible to all students in the class regardless of any accommodations some might have.

**Cultural humility and inclusivity**

- I should as much as possible, acknowledge all cultures represented in my classroom in ways as simple as using names from those cultures in illustrations.
- Nurture an environment in which all students feel welcome regardless of temperament, abilities, experiences or any other defining characteristic.

**Connect Learning Outcomes to class material**

For each new topic taught in class, highlight the related learning outcome(s).

## Bringing the STEM Instructional Program to the Classroom

In the two semesters following the STEM Instructional Program (Fall 2019 and Spring 2020), I applied some of the strategies I learned from the STEM Instructional Program. Details of some of these along with corresponding comments from course evaluations are highlighted in the table below.

| Strategies Employed | From Course Evaluations (Fall '19 & Spring '20) |
|---|---|
| Activity-based Learning:- the "think-pair-share" and "muddiest point" approaches were employed.<br>• Some activities required students to work in pairs or trios. In some instances, they worked individually to test the correctness of solutions arrived at in class or to apply a concept discussed in a short programming exercise. They also worked individually to identify topics already covered but which required further explanation.<br>• Assigning several lower stakes exercises which students could work on beyond the class period and submit for a grade helped to reduce students' anxiety and also provided an opportunity to think through the assigned problem and figure out how to write a program to solve it. | *"Course focused on hands on learning relying mostly on labs and projects."*<br><br>*"Many opportunities to ask questions in class - Lots of topics covered - Fun projects and labs - Not a stressful workload - Clear expectations and due dates, etc - Lots of room for creativity"* |
| Show cognitive empathy;<br>Be approachable:<br>• While I have usually been concerned in the past about the welfare and performance of my students, I made a conscious effort to do so even more, taking the initiative to reach out to students who missed classes repeatedly or appeared to be struggling with the material.<br>• I also realized that some students would not ask for help even when they needed it except if they were approached specifically by the instructor. I tried to reach out to such students often. | *"I just wanted to let you know that you were one of the best professors I had so far and the most understanding professor too."*<br><br>*"Fola seems to truly care about how well her students are doing, and the criteria of each assignment is explained clearly."*<br><br>*"Fola Olagbemi was incredibly good at her job. If there was a problem, she would fix it. If someone didn't understand something she would make sure you did. She was always communicative and actually tried to socialize with us instead of just teaching us. A kind woman and a great professor."* |

## Conclusion & Next Steps

***Setting the right tone*** for a class at the beginning can be instrumental in ensuring a pleasant experience for all students, while also highlighting what is expected of all participants (including the instructor) early on.

Also important, not only at the beginning of a course but throughout the semester, is ***reviewing the learning outcomes*** that should have been achieved by the end of the course. The periodic connection of class material to learning outcomes shows the relevance of the topics covered.

In addition, with the increased emphasis on diversity and inclusion and a resulting increase in the diversity of students in the classroom, there is the need to ensure that all students feel welcome and respected in the class. This calls for ***cultural humility*** and a willingness to identify and examine one's implicit biases and take necessary steps to ensure no student feels discriminated against or disrespected in any way..

Learning about strategies to improve one's effectiveness as an instructor is a very important aspect of developing oneself; but perhaps equally important is making out time to periodically ***reflect*** on the strategies utilized by considering the visible results of applying those strategies as well as feedback from students, be it in one-minute essays at the end of a class or in more formal course evaluations. Being able to identify what was or wasn't effective in the classroom provides valuable feedback that could be used to enhance both current and future students' experiences in the classroom.

It is my hope to be able to incorporate all these, in addition to those already implemented, in my teaching strategies, adopting a practice of continuous improvement such that my classroom is a place where all, myself included, can learn and enjoy learning.

## Works cited

1. The Active Learning Handbook – Engagement Techniques that Work; ***Philip Preville***; *tophat.com*

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